MISR Objectives for the ARM Cloud IOP

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The Department of Energy Atmospheric Radiation Measurement (ARM) program is limited to observing the vertical profile of clouds as they advect over a ground site. That is, the ARM radars and lidars (which will be used extensively in validating MISR cloud retrievals) provide a time-height picture of cloud events whereas the MISR instrument will be providing an essentially instantaneous view of (horizontal) cloud properties over a large area surrounding the ARM site.

In order to learn how to extrapolate the ARM time-height data to larger regions, the ARM program will be deploying a fleet of vertically pointing and scanning lidars and millimeter radars within a mesoscale region around the ARM Central Facility (CF) during a multi-week period. The measured data will permit an analysis of the correlation of cloud properties on various spatial scales.

Instrumentation at the Cloud IOP will, if all goes well, include:

1. A scanning millimeter radar at the CF.
2. A scanning lidar at the CF.
3. From 3 to 6 vertically pointing millimeter radars for deployment at sites in an array around the CF.
4. AERIs or other NFOV IR radiometers, microwave radiometers, surface met and shadowband radiometers will be installed at the additional radar sites.
5. in situ aircraft (UND Citation, UAV?)
6. ER-2 with MAS (or MASTER), S-HIS, CLS (lidar) and AirMISR.